

Amendments to the Claims

1-10. (Canceled)

11. (New): A method for identifying a selective blocker of a persistent Na⁺ channel whereby the method comprises the steps of:

- a) providing a test sample 1 comprising
 - i) a Na⁺-free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye;
 - iii) a cell having a K⁺ channel, a transient Na⁺ channel and a persistent Na⁺ channel;
and
 - iv) a potential Na⁺ channel blocker;
- b) depolarizing membrane of the cell in the test sample 1;
- c) generating a current through the persistent Na⁺ channel by adding Na⁺ to test sample 1 at least 10 msec after step (b);
- d) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;
- e) providing a control sample 1 comprising
 - i) a Na⁺-free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K⁺ channel, a transient Na⁺ channel and a persistent Na⁺ channel;
- f) depolarizing membrane of the cell in the control sample 1;
- g) generating a current through the persistent Na⁺ channel by adding Na⁺ ions to the control sample 1 at least 10 msec after step (f);
- h) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;
- i) determining the relative emitted fluorescence 1 by comparing the emitted fluorescence from step (d) to the emitted fluorescence from step (h);
- j) providing a test sample 2 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye;
 - iii) a cell having a K⁺ channel and a transient Na⁺ channel; and

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- iv) a potential Na⁺ channel blocker
 - k) depolarizing membrane of the cell in test sample 2;
 - l) detecting the fluorescence emitted by the voltage-sensitive dye in test sample 2;
 - m) providing a control sample 2 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K⁺ channel and a transient Na⁺ channel;
 - n) depolarizing membrane of the cell in control sample 2;
 - o) detecting the fluorescence emitted by the voltage-sensitive dye in control sample 2;
 - p) determining a relative emitted fluorescence 2 by comparing the emitted fluorescence from step (l) to the emitted fluorescence from step (o);
 - q) comparing the relative emitted fluorescence 1 in step (i) with the relative emitted fluorescence 2 in step (p).
12. (New): The method according to Claim 11, wherein the cell expresses an endogenous persistent Na⁺ channel.
13. (New): The method according to Claim 11, wherein the cell expresses an exogenous persistent Na⁺ channel.
14. (New): The method according to Claim 13, wherein the cell is HEK-293.
15. (New): The method according to Claim 11, wherein the cell expresses a Type III persistent Na⁺ channel.
16. (New): The method according to Claim 11, wherein the membrane depolarization of step (b) is by K⁺ addition.
17. (New): The method according to Claim 11, wherein the membrane depolarization of step (f) is by K⁺ addition.
18. (New): The method according to Claim 11, wherein the membrane depolarization of step (b) and step (f) is by K⁺ addition.
19. (New): The method according to Claim 11, wherein the membrane depolarization of step (b) is by field stimulation.
20. (New): The method according to Claim 11, wherein the membrane depolarization of step (f) is by field stimulation.

21. (New): The method according to Claim 11, wherein the membrane depolarization of step (b) and step (f) is by field stimulation.
22. (New): The method according to Claim 11, wherein the membrane depolarization of step (k) is by field stimulation.
23. (New): The method according to Claim 11, wherein the membrane depolarization of step (n) is by field stimulation.
24. (New): The method according to Claim 11, wherein the membrane depolarization of step (k) and step (n) is by field stimulation.
25. (New): A method for identifying a blocker of a persistent Na⁺ channel whereby the method comprises the steps of:
 - a) providing a test sample 1 comprising
 - i) a Na⁺-free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye;
 - iii) a cell having a K⁺ channel, a transient Na⁺ channel and a persistent Na⁺ channel;
and
 - iv) a potential Na⁺ channel blocker;
 - b) depolarizing membrane of the cell in the test sample 1;
 - c) generating a current through the persistent Na⁺ channel by adding Na⁺ to test sample 1 at least 10 msec after step (b);
 - d) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;
 - e) providing a control sample 1 comprising
 - i) a Na⁺-free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K⁺ channel, a transient Na⁺ channel and a persistent Na⁺ channel;
 - f) depolarizing membrane of the cell in the control sample 1;
 - g) generating a current through the persistent Na⁺ channel by adding Na⁺ ions to the control sample 1 at least 10 msec after step (f);
 - h) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;

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- i) comparing the emitted fluorescence from step (d) to the emitted fluorescence from step (h).
26. (New): The method according to Claim 25, wherein the cell expresses an endogenous persistent Na⁺ channel.
27. (New): The method according to Claim 25, wherein the cell expresses an exogenous persistent Na⁺ channel.
28. (New): The method according to Claim 27, wherein the cell is HEK-293.
29. (New): The method according to Claim 25, wherein the cell expresses a Type III persistent Na⁺ channel.
30. (New): The method according to Claim 25, wherein the membrane depolarization of step (b) is by K⁺ addition.
31. (New): The method according to Claim 25, wherein the membrane depolarization of step (f) is by K⁺ addition.
32. (New): The method according to Claim 25, wherein the membrane depolarization of step (b) and step (f) is by K⁺ addition.
33. (New): The method according to Claim 25, wherein the membrane depolarization of step (b) is by field stimulation.
34. (New): The method according to Claim 25, wherein the membrane depolarization of step (f) is by field stimulation.
35. (New): The method according to Claim 25, wherein the membrane depolarization of step (b) and step (f) is by field stimulation.
36. (New): A method for identifying a selective blocker of a persistent Na⁺ channel whereby the method comprises the steps of:
- a) providing a test sample 1 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K⁺ channel and a persistent Na⁺ channel wherein a resting membrane potential of the cell is approximately halfway between an equilibrium potential of Na⁺ and an equilibrium potential of K⁺;
 - b) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;
 - c) adding a potential Na⁺ channel blocker to test sample 1;
 - d) detecting fluorescence emitted by the voltage-sensitive dye in the test sample 1;

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- e) determining a relative emitted fluorescence 1 by comparing the emitted fluorescence from step (b) with the emitted fluorescence from step (d);
 - f) providing a test sample 2 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye;
 - iii) a cell having a K^+ channel and a transient Na^+ channel; and
 - iv) a potential Na^+ channel blocker
 - g) depolarizing membrane of the cell in test sample 2;
 - h) detecting the fluorescence emitted by the voltage-sensitive dye in test sample 2;
 - i) providing a control sample 2 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K^+ channel and a transient Na^+ channel;
 - j) depolarizing membrane of the cell in control sample 2;
 - k) detecting the fluorescence emitted by the voltage-sensitive dye in control sample 2;
 - l) determining a relative emitted fluorescence 2 by comparing the emitted fluorescence from step (h) relative to an emitted fluorescence from step (k);
 - m) comparing the relative emitted fluorescence in step (e) with the relative emitted fluorescence in step (l).
37. (New): The method according to Claim 36, wherein the resting membrane potential of the cell is between -40 mV and -20 mV.
38. (New): The method according to Claim 36, wherein the membrane depolarization of step (g) is by field stimulation.
39. (New): The method according to Claim 36, wherein the membrane depolarization of step (j) is by field stimulation.
40. (New): The method according to Claim 36, wherein the membrane depolarization of step (g) and step (j) is by field stimulation.
41. (New): A method for identifying a blocker of a persistent Na^+ channel whereby the method comprises the steps of:

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- a) providing a test sample 1 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K^+ channel and a persistent Na^+ channel wherein a resting membrane potential of the cell is approximately halfway between an equilibrium potential of Na^+ and an equilibrium potential of K^+ ;
 - b) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;
 - c) adding a potential Na^+ channel blocker to test sample 1;
 - d) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;
 - e) comparing the emitted fluorescence from step (b) with the emitted fluorescence from step (d).
42. (New): The method according to Claim 41, wherein the resting membrane potential of the cell is between -40 mV and -20 mV.
43. (New): A method for identifying a selective blocker of a persistent Na^+ channel whereby the method comprises the steps of:
- a) providing a test sample 1 comprising
 - i) a Cl^- -free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye;
 - iii) a cell having a K^+ channel and a persistent Na^+ channel wherein a K^+ conductance of the K^+ channel is at least 50-fold higher than a Na^+ conductance from the persistent Na^+ channel; and
 - iv) a potential Na^+ channel blocker;
 - b) depolarizing membrane of the cell with a Na/K pump blocker to the test sample 1;
 - c) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;
 - d) providing a control sample 1 comprising
 - i) a Cl^- -free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and

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- iii) a cell having a K^+ channel and a persistent Na^+ channel wherein a K^+ conductance of the K^+ channel is at least 50-fold higher than a Na^+ conductance from the persistent Na^+ channel;
 - e) depolarizing membrane of the cell with a Na/K pump blocker to the control sample 1;
 - f) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;
 - g) comparing the emitted fluorescence from step (c) to the emitted fluorescence from step (f);
 - h) providing a test sample 2 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye;
 - iii) a cell having a K^+ channel and a transient Na^+ channel; and
 - iv) a potential Na^+ channel blocker
 - i) depolarizing membrane of the cell in test sample 2;
 - j) detecting the fluorescence emitted by the voltage-sensitive dye in test sample 2;
 - k) providing a control sample 2 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K^+ channel and a transient Na^+ channel;
 - l) depolarizing membrane of the cell in control sample 2;
 - m) detecting the fluorescence emitted by the voltage-sensitive dye in control sample 2;
 - n) comparing the emitted fluorescence from step (j) relative to an emitted fluorescence from step (m);
 - o) comparing the difference in step (g) with the difference in step (n).
44. (New): The method according to Claim 43, wherein the Na/K pump blocker is ouabain.
45. (New): A method for identifying a blocker of a persistent Na^+ channel whereby the method comprises the steps of:
- a) providing a test sample 1 comprising
 - i) a Cl^- -free physiological buffer;

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- ii) a voltage-sensitive fluorescence dye;
 - iii) a cell having a K^+ channel and a persistent Na^+ channel wherein a K^+ conductance of the K^+ channel is at least 50-fold higher than a Na^+ conductance from the persistent Na^+ channel; and
 - iv) a potential Na^+ channel blocker;
- b) depolarizing membrane of the cell with a Na/K pump blocker to the test sample 1;
- c) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;
- d) providing a control sample 1 comprising
- i) a Cl^- -free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K^+ channel and a persistent Na^+ channel wherein a K^+ conductance of the K^+ channel is at least 50-fold higher than a Na^+ conductance from the persistent Na^+ channel;
- e) depolarizing membrane of the cell with a Na/K pump blocker to the control sample 1;
- f) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;
- g) comparing the emitted fluorescence from step (c) relative to the emitted fluorescence from step (f).
46. (New): The method according to Claim 45, wherein the Na/K pump blocker is ouabain.